

Evaluation of FUSN™ (26-0-0-14) on Ranger Russet Potato Production

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Introduction:

Potato production is a mainstay of the high-altitude, arid growing regions of the northwestern U.S., with Idaho leading in potato production, followed by Washington and Oregon.

Challenge:

Potato farmers must produce crops that meet stringent quality requirements in order to meet their contract obligations. Optimizing potato crops to improve yield and quality, without overspending on unnecessary field treatments, is always the grower's goal.

Research:

Dr. Galen Mooso and Dr. Terry Tindall chose a 38-acre commercial potato production field near Wilder, Idaho. The field was transitioning to potatoes after many years of growing alfalfa. Soil tests called for 268 lbs of nitrogen/acre, along with other nutrients needed by potatoes. The field was mapped with GPS to create a yield monitor map.

Methodology:

The field received uniform preplant fertilizer applications and starter bands applications, then the field was split into two areas. The south half of the field received the grower standard practice of 100 lbs. of ammonium sulfate (AMS=21-0-0-24)/acre as a topdress. The north half of the field received 100 lbs. of FUSN™ (26-0-0-14) as a topdress. Irrigation and field management were uniform for the entire field.

Petiole samples were taken every two weeks from early June to early August. Crossover diggers harvested the crop in mid-September. Ten hand samples were collected from each test area, then hand-graded and separated into size categories. Test samples were tagged with GPS coordinates to calibrate and test the yield mapping system.

Results:

Total yield for the section treated with FUSN increased by an average of 2,900 lbs./acre over the section treated with ammonium sulfate. U.S. #1-grade potatoes increased 3%. Tubers greater than 6 oz. in size increased 7%. Potatoes meeting either 6–10 oz. or 10+ oz. contract requirement increased from 350 to 409 cwt. with FUSN. Undersized potatoes decreased from 9% to 7% of yield with FUSN.

The GPS yield monitor data shows better growth and coloration (green and yellow) in the half of the field that was topdressed with FUSN, while the half of the field that received only GSP had poorer coloration (brown). No high correlation was found between the yield map and the test samples used for GPS calibration.

Practical Applications:

Based on the tested samples, growers' returns increased by \$205/acre (at current contract rates) due to the treatment with FUSN. The quantity of tubers meeting size requirements also increased with FUSN treatment.

Based on the yield samples taken at harvest, and then evaluated by the inspection service, FUSN increased grower returns by \$205/ac. based on JRS contract pricing.

Potato Quality Traits	GSP	GSP + FUSN
US #1	77%	80%
6+ oz. >	61%	68%
Process undersize	9%	7%
Unusable	17%	13%
Bruise free	70%	62%
Specific gravity	1.086	1.086
Fry color 0	100%	98%
Sugar ends	11%	16%
JRS Ranger contract return, \$/ac.	\$3,845	\$4,050

Potato quality traits and net returns for Ranger Russet potatoes as affected by topdress N applications.

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